

BIOLOGICAL EVALUATION  
Spruce Budworm Infestation

National Forest and Adjacent Indian,  
State, and Private Lands

Region 3

1965

John F. Chansler

The spruce budworm is currently infesting about 470,000 acres of mixed-conifer forests in Region 3. The infestation occurs on five widely separated units (see map). During August and September, an egg mass survey was conducted on 18 sample plots to evaluate population trends in the infested areas.

There is a virulent, fast-spreading spruce budworm population on the Taos Unit. It is recommended that this infestation be treated in 1966. Elsewhere, budworm populations are generally declining and expected to cause only light to moderate defoliation next year.

General Information

Insect - Spruce budworm, Choristoneura fumiferana (Clem.)

Hosts - Douglas-fir, Pseudotsuga menziesii (Mirb.) Franco  
White fir, Abies concolor (Gord. & Glend.) Lindl.  
Corkbark fir, Abies lasiocarpa var. Arizonica (Merriam) Lemm.  
Blue spruce, Picea pungens Engelm.  
Engelmann spruce, Picea engelmannii Parry

Defoliation Standards - Light, 0 to 25% new growth defoliated  
Moderate, 26 to 50% new growth defoliated  
Heavy, 51 to 75% new growth defoliated  
Severe, 76 to 100% new growth defoliated

## Entomological Units

Eagle Nest

Location: State and private land, east of the Carson National Forest.

Extent: 250,000 acres infested. No change since 1964.

1965 Defoliation: Generally moderate.

Damage: Severe top-injury and some top-killing occurred in localized areas.

Chama

Location: Private land, west of the Carson National Forest.

Extent: 60,000 acres infested. This was a decrease since last year of about 40,000 acres.

1965 Defoliation: Light.

Damage: Insignificant for the past two years.

Taos

Location: Almost entirely within the Eastern Division of the Carson National Forest.

Extent: 50,000 acres infested. Discovered in 1965.

1965 Defoliation: Light to moderate.

Damage: Some reproduction deformed. Spots of top-kill in overstory.

Cloudcroft

Location: Lincoln National Forest.

Extent: 90,000 acres infested. No change since 1964.

1965 Defoliation: Generally moderate. Did not reach proportions expected.

Damage: Reproduction killed and deformed in localized areas. No significant damage in overstory.

Glenwood

Location: Gila National Forest.

Extent: 20,000 acres infested. This was a decrease since last year of about 20,000 acres.

1965 Defoliation: Light.

Damage: Insignificant.

#### Sampling Method

A sample plot consisted of five dominant or co-dominant Douglas-fir trees. Two men, using a 30-foot pole with pruning saw, removed two lower mid-crown branches. Foliage from one side of each branch was clipped and discarded. The remaining foliage was then placed in a triangle, measured and placed in numbered cotton bags. Thus, the equivalent of one entire branch per tree, or five branches per plot, was sampled.

A total of 153,630 square inches of foliage was examined from 18 plots, for an average of approximately 8,535 square inches per plot. Needles with spruce budworm egg masses were removed from the foliage and tallied by plot. The egg masses were then grouped as old or new. The new egg masses were then examined for egg parasitism.

#### Results

Population trends are determined by comparing the number of 1965 new egg masses with the number of 1964 new egg masses. The data are given in Table 1 for each of the 18 plots sampled. Damage estimates for 1966 are based on the number of 1965 egg masses.

Egg parasitism decreased since last year. Last year, parasitism was found in five plots. This year only the Sacramento Lookout plot had parasitism, and there it affected less than one percent of the new egg masses.

Table 1. Summary of 1964 and 1965 Spruce Budworm Egg Mass Survey Data from 19 Douglas-fir Sample Plots in New Mexico.

<u>Unit</u> <u>Sample Plot</u>	Unparasitized Egg Masses Per 1,000 Sq. In. Foliage	
	<u>1964</u>	<u>1965</u>
<u>Eagle Nest Unit</u>		
Cyphers Mine	75.1	--
Garcia Peak	12.4	1.3
LeBus Bros.	18.5	5.8
State Wildlife Area	13.9	7.3
Sawmill Canyon	--	8.9
<u>Chama Unit</u>		
Lobo Lodge	1.8	0.0
Willow Creek	3.1	0.1
Canones Creek	0.5	0.5
Brazos Box	34.1	11.6
<u>Taos Unit</u>		
Upper Arroyo Hondo	--	14.8
Lower Arroyo Hondo	--	18.5
Simpson Canyon	--	7.2
Capulin Peak	--	0.2
Capulin Canyon	--	3.7
LaJunta Canyon	--	0.3
<u>Cloudcroft Unit</u>		
Sacramento Lookout	25.5	14.9
Nelson Canyon	10.1	2.8
Mescalero Indian Reservation	0.2	0.0
<u>Glenwood Unit</u>		
Iron Creek Mesa	--	0.0

Eagle Nest Unit - The population trend in this area is downward. Defoliation next spring is expected to be generally light to moderate. Isolated areas may receive heavy defoliation. The Cyphers Mine plot could not be sampled this year.

Chama Unit - Egg mass densities continued to decline for the third straight year on this unit. Light defoliation is predicted for 1966, except in the Brazos drainage where defoliation is expected to be light to moderate.

Taos Unit - This is the first year of sampling this unit. Ground and aerial observations show that the population is rapidly expanding. The egg mass counts indicate that 1966 defoliation will be heavy within and north of the Rio Pueblo drainage. Light to moderate defoliation is expected south of the Rio Pueblo drainage.

Cloudcroft Unit - The population trend is downward on this unit. Infestation boundaries have not changed, but population centers within the boundaries appear to have shifted. Defoliation is expected to be light to moderate with some areas sustaining heavy damage.

Glenwood Unit - No new egg masses were found in this unit. Light defoliation is expected in 1966.

#### Discussion and Summary

The rapidly expanding infestation on the Taos Unit is the most serious spruce budworm problem in the Region. Feeding has caused moderate defoliation, giving much of the area a run-down appearance. At the present rate of feeding, top-killing and reproduction loss is imminent. The infestation is also important because it threatens to be a source of reinfestation to the areas treated in 1962. In order to protect forest resources and the 1962 control investment, it is recommended that the infestation in the Taos Unit be controlled.

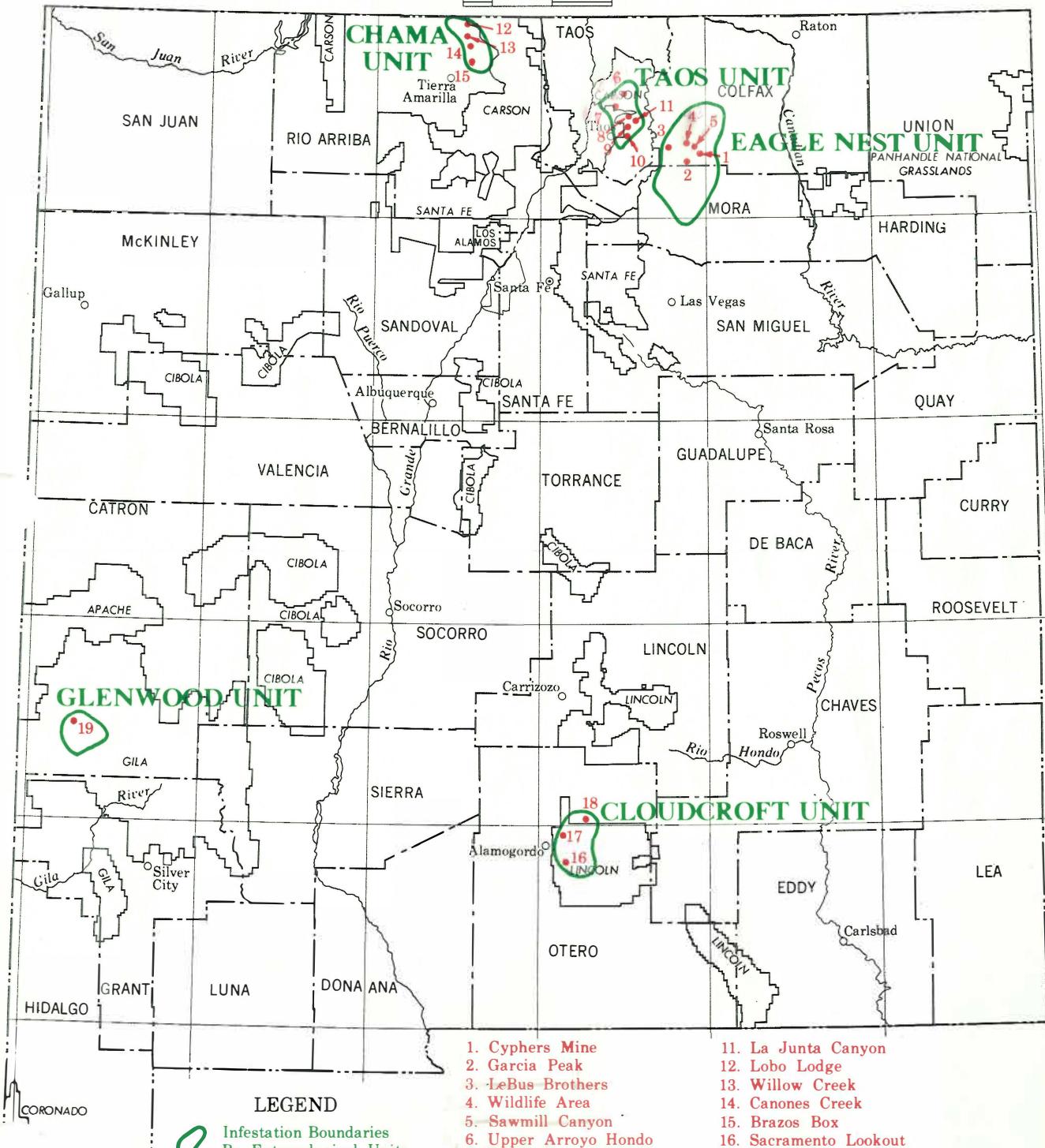
Spruce budworm populations on the Cloudcroft, Eagle Nest, Chama, and Glenwood Units are declining. Control is not recommended in these areas next year.

**BIOLOGICAL EVALUATION  
SPRUCE BUDWORM INFESTATION  
NATIONAL FOREST AND ADJACENT INDIAN,  
STATE, AND PRIVATE LANDS**

NEW MEXICO

1965

10 0 20 40 Mi.



**LEGEND**



1. Infestation Boundaries  
By Entomological Units

4. Sample Plot

1. Cyphers Mine
2. Garcia Peak
3. LeBus Brothers
4. Wildlife Area
5. Sawmill Canyon
6. Upper Arroyo Hondo
7. Lower Arroyo Hondo
8. Simpson Canyon
9. Capulin Peak
10. Capulin Canyon
11. La Junta Canyon
12. Lobo Lodge
13. Willow Creek
14. Canones Creek
15. Brazos Box
16. Sacramento Lookout
17. Nelson Canyon
18. Mescalero Indian Reservation
19. Iron Creek Mesa